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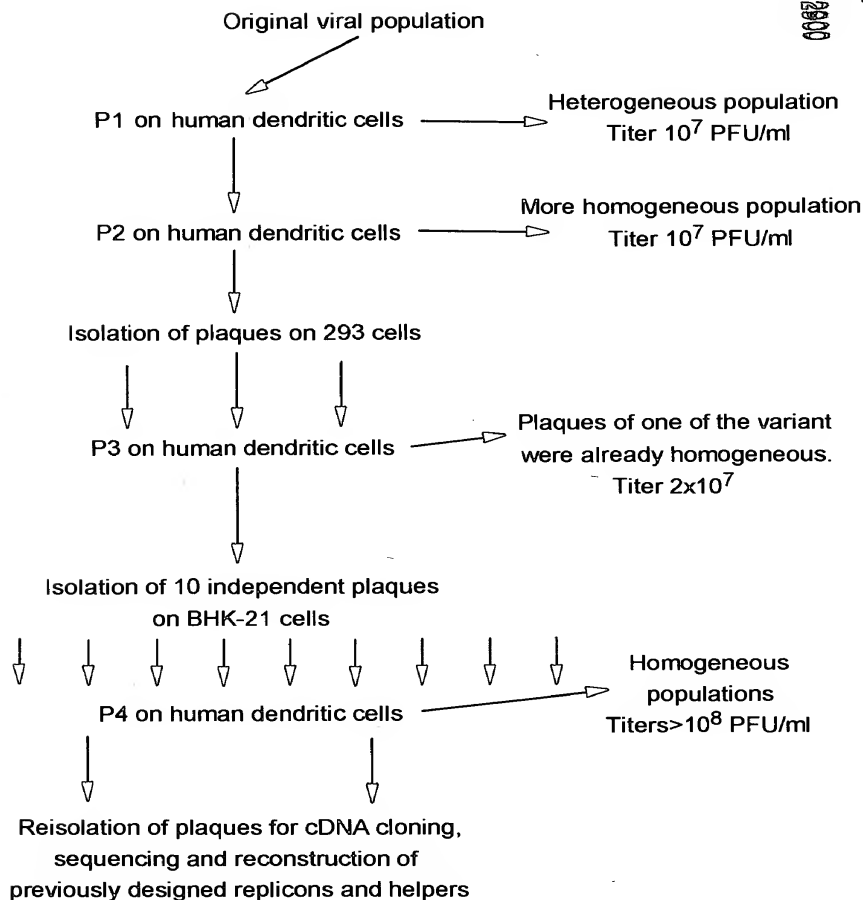


FIG. 1

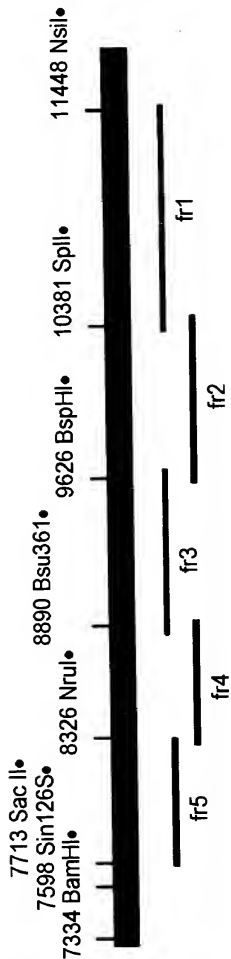


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A)



B)

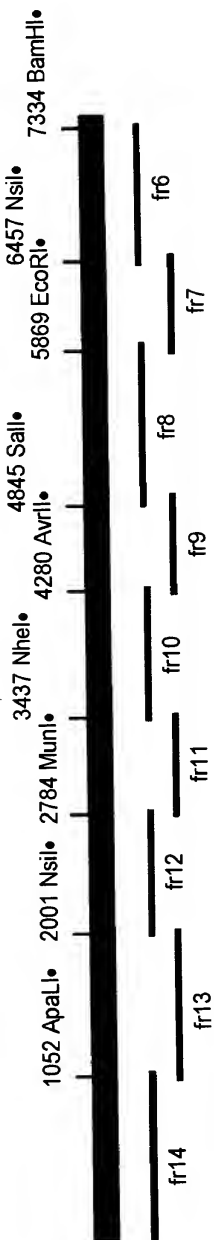


FIG. 2A



ATTGACGGCGTAGTACACACTATTGAATCAAAACAGCCGACCAATTGCACTACCATCACAATGGAGAAGCCAGTAG
TAAACGTAGACGTAGACCCCCAGAGTCCGTTTGTGCTGCAACTGCAAAAAGCTTCCCGCAATTGAGGCTAGTAG
CACAGACGGTCACTCCAAATGACCATGCTAATGCCAGAGCATTTCGCATCTGGCCAGTAAACTAATCGAGCTGG
AGGTTCTCTACACAGCGAGCATCTTGGACATAGGCAGCGCACCGCTCGTAGAAGTGTTCGAGCAGCAGGTATC
ATTGTGCTCTGCCCATGCGTAGTCCAGAAGACCCGGACCGCATGATGAAATATGCCAGTAACTGGCGGAAAAAG
CGTGCAAGATTACAAACAAGAACTTGCATGAGAAGATTAGGATCTCCGAGCCGTACTTGATACGCCGGATGCTG
AAACACCATCGCTCTGCTTTCACAACGATGTTTACCTGCAACATGCGTGCCGAATATTCCGTATCGCAGGACGTGT
ATATCAACGCTCCCGGAACATATCTATCATCAGGCTATGAAAGCGGTGCGGACCCGTGTATGAGTATGGCTTCGACA
CCACCCAGTTTCATGTTCTCCGCTATGGCAGGTTTCTACCTGCGTACAACACCACTGGCGCGAGGAAGTCTC
TTGAAGCGGTAAACATCGGACTTTGCGACACAAGCTGAGTGAAGGTAGGACAGGAAAAATTTGCGATAATGAGGA
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TGCAGAGCTGGCATCTTCCATCGGTGTTCCACTTGAATGGAAGCAGTCGTACACTTGGCGCTGTGATACAGTGG
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TTACACACAATAGCAGGGGCTTCTTGCTATGCAAGTTTACTGACACAGTAAAAGGAAGAACCGGGTATCGTTCCCTG
TGTGCACTGATACCTCCGCGCACTATGCTAGTACGATGACTGGTATAATGGCCAGGATATATCACTGACGATG
CACAAAAACTTCTGGTTGGGCTCAACCAGCGAATTGTCTAATAACGGTAGGACTAACAGGAACACCAACCATGTC
AAAATTACCTTCTGCGCATGATAGCACAAAGGTTTTCAGCAATGGGCTAAGGAGGCCAAGGATGATCTTGATAACG
AGAAAAATGCTGGGTACTAGAGAACGCAAGCTTACGTACGGCTGCTTGTAGGATGCTCAGGAGGAAGCCAGAGCGT
CGTTTTATCGCCACCTGGAACGCAGACCATCGTAAAAGTCCCAGCCTCTTTAGCGCTTTTCCATGTGCTCGG
TATGGACGACCTCTTTGCCATGTGCGCTGAGGCAGAAATTGAACTGGCATTTGCACCAAGAAAGAGGAGGAAAAAC
TGCTGCAGGTCTCGGAGGAATTAGTCTATGAGGCCAAGGCTGCTTTGAGGATGCTCAGGAGGAAGCCAGAGCGT
AGAAGCTCCGAGAAGCACTTCCACCATTAGTGGCAGACAAAGGCATCGAGGCAGCCGAGAAGTTGTCTGCGAAG
TGAAGGGGCTCCAGGCGGACATCGGAGCAGCATTAGTTGAAACCCCGCGGGTCACTAAGGATAATACCTCAAG
CAAAATGACCGTATGATCGGACAGTATCTGTTGCTCGCCAAACTCTGTCTGAAGAACTGCAAACTCGCACCG
CGCACCCGCTAGCAGATCAGGTTAAGATCATAACACACTCCGGAAGATCAGGAAGGTACGCGGTGCAACCATACG
ACGCTAAAGTCTGATGCTCAGCAGAGGTTGCGGTACCATGGCCAGAAATTCCTAGCACTGAGTGAGAGCGCCACGT
TAGTGTAACAAGGAGAGAGTTTGTGTAACCGCAACTATACCACTTGCCATGCTAGCCGCGCAAGAAATACAG
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TGGAGGAGTGAAGAGCCGCACTGCGGTCCGTTACAAGGTGCAAAACAATAGGAGTGATAGGACACACCGGGTGG
GCAAGTCAGCTATTATCAAGTCAACTGTGACGGGCAGAGATCTTGTACAGCGGAAAGAAAGAAATTTGTCGCG
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TTGCTATCGTCAGGCCCGCAAGAGGTAGTACTATGCGGAGACCCCATGCAATCGGGATTCTTCAACATGATGTC
AACTAAAGGTACATTTCAATCACCTGAAAAAGACATATGCACCAAGACATTTCTACAAGTATATCTCCCGCGT
GCACACAGCCAGTTACAGTATTTGATCGACACTGCATTACGATGGAAGATGAAACACCAAGCCGTCGCAAGA
AGAACATTTGAAATCGATATTACAGGGGCCACAAAGCCGAAGCCAGGGGATCATCTCTGACATGTTTCCGCGGT
GGGTTAAGCAATTGCAATCGACTCTCCGCAATGAAGTATGACAGCGCGCTCAAGGGCTAACACGAA
AAGGATGTATGCGGTGCGGCAAAAGTCAATGAAACCCACTGTACGCGATCACATCAGAGCATGTGAACGTGT
TGCTCACCCGCTAGTACGAGCAGGTAGTGTGGAACCTTGCAGGGCGACCCATGGATTAGCAGCTCACTAACA
TACCTAAAGGAACTTTCAGGCTACTATAGAGACTGGGAAGCTGAACACAGGAATAATTTGCTGCAATAAACA
GCCCCACTCCCGTGCCTAATCCGTTTTCAGCTGCAAGACCAAGCTTTGCTGGGCGAAAGCATTGGAACCGATACTAG
CCAGCGCCGGTATCGTACTTACCGGTTTCCAGTGGAGCGAAGCTGTTCCACAGTTTTCGCGATGACAAACCACT
CGGCTATTATGCGCTTAGACGTAATTTGCTAAGTTTTCGCGCATGGATTTGACAAAGCGGCTGTTTCTTAAAC
AGAGCATCCCACTAACGTACCATCCCGCGATTGACGAGGCGGCTAGCTCATTGGGACAACAGCCAGGAACCC
GCAAGTATGGGTACGATACGCCATTTGCCGCGCAACTCTCCGTAGATTTCGGTGTTCGAGTACGCTGGGAAGG
GCAACAATTTGATTGTCAGAGCGGGGACCAAGAGTTATCTCTGACAGACATAACCTGCTCCGCTGAAACCGCA
ATCTTCTCACGCCCTTAGTCCCGAGTACAAGGAGAAGCAACCCGCGCCGTCGAAAAATTTCTTGAACAGGTTCA
AACACCACTCAGTACTTGTGTTATCAGAGGAAAAATTTGAAGTCTCCCGTAAAGAGATCGAATGGATCGCCCCGA
TTGGCATAGCCGCTGAGATAGAACTACAACCTTGCTTTCGCGTTTCCGCGAGGACCGGTACACCTGGTGT
TCATCAACATTGGAACATAAATACAGAAACCCACTTTTTCAGCAGTGCAGAACCATGCGGCGACCTTAAAAACCC
TTTCGCGTTCCGCCCTGAATTTGCTTAAACCCAGGAGGCACCTCTGCTGAGTAACTGCTATGGCTACGCCGACCGCA
ACAGTGAGGACGTATCCCGCAAGGTTTGTGCGAGAAAGTTGTCAGGGTGTCTGCGAGCGAGACGATTTGTGCTCAA



GC AATACAGAAATGTACCTGATTTTCCGACAACAGCCGTACACGGCAATTCACCCGCACCACCTGA
ATTGCGTGATTTCGTCCGTGTATGAGGGTACAAGAGTGGAGTTGAGCGCGCGCGTCAATCCGACACCAAGGG
AGAATATTGCTGACTGTCAAGAGGAAGCAGTTGTCAACGCAGCCAACTCCGCTGGGTAGACCAGGCGAAGGAGTCT
CGCGTGCCATCTATAAACGTTGGCCGACCACTTTACCGATTTCAGCCACGGAGACAGGCGCAAGATGACTG
TGTGCTTAGGAAAGAAAGTATCAACGCGGTCCGCGCTGATTTCCGGAAGCACCCGAGAAGCAGCTTGAAAT
TGCTACAAAACGCTTACCATGTCAGTTGGCAGACTTAGTAAATGAACATAAATCAAGTCTGTGCGCCATTCCACTGC
TATCTACAGGCTTTACGACGCGGAAAGACCGCTTGAAGTATCACTTAAGCTGTGACACCGCGCTAGACA
GAACTGACGCGGAGCTAACCATCTATTGCTCGGTGATAAGAAAGTGAAGGAAAGAAATCGACGCGGCACTCCAACCTTA
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GCTTGAAGGGAAGAAAGGATTCAGTACTACAAAAGGAAATTTGATTCGTACTTCGAAGGCAACAACTCCATC
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ACATATTGGGTGAGACCATGGAAGCAATCCGCGAAAAGTGCCCGGTGCACATAACCCGCTCGTCTAGCCCGCCCA
AAACGTTGCGCTTGTGATGTATGCCATGACGCCAGAAAGGTTCCACAGACTTAGAAGCAATAACGTCAAAG
AAGTTACAGTATGCTCCTCCACCCCTTCTTAAGCACAAAATTAAGATGTTTCAAGAGGTTCAAGTGCACGAAAG
TAGTCTGCTTTAATCCGACACTCCGCGATTCGTTCCCGCCGTAAGTACATAGAAGTGCAGAACAGCTACCG
CTCTCTGTCACAGCGCGAGGAGGCCCGAAGTTGTAGCGACACCGTCCACATCTACAGCTGATAACACTCGC
TTGATGTACAGACATCTCACTGGATATGGATGACAGTAGCGAAGGCTCACTTTTTCGAGCTTTAGCGGATCGG
ACAACCTATTACTAGTATGGAAGTGGTCTGTCAGGACCTAGTTCACTAGAGATAGTAGACCGAAGGCGAGGTGG
TGTGGCTGACTTACTGCGCTCAAGAGCTGCGCCCTATTCCACCGCAAGGTTAAAGAAAGTGGCCGCGCTGG
CAGCGGTAGAAAAGAGCCACTCCACCGGCAAGCAATAGCTCTGAGTCCCTCCACCTCTCTTTTGTGGGGTAT
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CGGATGTGCTTATGCTTTGCGATCGTTTTTCGACGGAGAGATTGATGAGCTGAGCCGACAGTAACTGAGTCCG
AACCCGTCCTGTTTGGATCATTTGAACCGGGCGAAGTGAACCTCAATTATATCGTCCCGATCAGCCGTATCTTTTC
CACTACGCAAGCAGAGACGTAGACGAGGAGCAGGAGGACTGAATCTGACTAACCGGGGTAGGTGGGTACATAT
TTTCGACGGACACAGGCGCTGGGCACTTGCAAAAGAAAGTCCGTTCTGCGAACCAGCTTACAGAACCGACCTTGG
AGCGCAATGTCTCGAAAGAAATTCATGCCCGCGTCTCGACACGTCGAAAGAGGAAACACTCAAACTCAGGTACC
AGATGATGCCACCGAAGCCAAAGAAAGTAGGTACCAGTCTCGTAAAGTAGAAAATCAGAAAGCCATAACCACTG
AGCGACTCTGTCAGACTACGCTGTATAAAGTCTGCCACAGATCAGCCAGAAGTCTATTAAGATCACTTCCGA
AACCATTGTACTCCAGTAGCGTACCGCGAACTACTCCGATCCACAGTTCCGCTGTAGCTGTCTGTAAACAACTATC
TGCAATGAGAATCTCCGACAGTAGCATTTATCAGATTACTGACGAGTACGATGCTTATGGAATGTGTAGACG
GGACAGTCGCTGCTTGGATGTGCAACCTTCTGCCCCGCTAAGCTTTAGAAGTATCCCGAAAAAATCAGTATATA
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GAAAATATGCAATGTAATGACGAGTATTGGGAGGAGTTGCTCGGAAGCCAAATTAGGATTACCACTGAGTTTGTC
CCGATATGTAGCTAGACTGAAAGGCCCTTAAGGCCGCGCACTATTGTCAAAGAGCGTATAATTGGTCCCATTTGC
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AAGAAAGACCGAAAGTACAAGTGATACAAGCCGAGAACCCCTGGCGACTGCTTACTTATGCGGGATTCAACGGG
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ACTTCTGCGCGGAGTTTATCTTGAAGATTTCGTTACTTCCAGCGTCCGCGTTCACCGGACCCCGTgaaagggc
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ttacacgtgctactaggtatgagaactttgcccagagcaaaagcgtatccaagccatccaaggggaaataa
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agcaaccacccaagccgaagaaacccaaacccaggaagaagaagcaactgcaaaacccaaacccggaa
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ggcagcgcatggcctggaaggaaggaaggaatgaacccctgacacgtgaaaggaacacccacgacccctgtgctat
caaagctcaaattttaccagttcgctgacataagacatggagttgcagactgacactgaacatggaagtagg
catttcacctacaccagtgaaacccccgaagattctataactggcaccacggagcggtgcagtatagtgagggtg
gattttaccatccttcgaggtaggagggcagaggagacagcggtcgctccgatatggataactccggtcggggtg

FIG. 2C-2



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TCGCGATAGTCTCTCGGTGGAGCTGATGAAGGAAACACGAACTGCCCTTTCCGGTCGTCACTGGAATAGTAAAGGGA
AGACAATTAAGACGACCCCGGAAGGGACAGAAGAGTGGTCCGCAGCACCACTGGTCAACGGCAATGTGTTGCTCG
GAAATGTGAGCTTCCCATGCGACCGCCCGCCCATGCTATACCCGCGAACCTTCCAGAGCCCTCGACATCCTTG
AAGAGAACGTGAACCATGAGGCCTACGATACCCCTGCTCAATGCCATATTGCGGTGCGGATCGTCTGGCAGAAGCA
AAAGAAGCGCTCACTGACGACTTTACCCTGACCAGCCCTACTTGGGCACATGCTCGTACTGCCACCATACCTGAAC
CGTGCTTCAGCCCTGTTAAGATCGAGCAGGTCTGGGACGAAGCGGACGATAACACCATACGCATACAGACTTCCG
CCCAGTTTGATACGACCAAAGCGGAGCAGCAAGCGCAACAAGTACCGTACATGTGCTTAAAGCAGGATCACA
CCGTTAAAGAAGGCCCATGGATGACATCAAGATTAGCACCTCAGGACCGGTAGAGGCTTAGCTACAAGGAT
ACTTTCTCCTCGCAAATGCCCTCCAGGGGACAGCGTAACGGTTAGCATAGTGAGTAGCAACTCAGCAACGTCTAT
GTACACTGGCCCGCAAGATAAAACCAAAATTCGTGGGACGGGAAAAATATGATCTACCTCCCGTTTACCGGTAAAA
AAATTCCTTGACAGTGTACGACCGCTCTGAAAGGAACAACCTGACGGCTACATCATATGCAAGGCCGGGACCGC
ACGCTTATACATCCTACCTGGAAGAATCATCAGGGAAAGTTACGCAAGCCGCCATCTGGGAAGAACATTACGT
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AGCATGTGCGTCCCTATAAGAGTACCAAGCAAGTGGGTCTTCAACTACCGGACTTGATCAGACATCGAGACC
ACACGGCCCAAGGGAAATTGCAATTTGCTTTCAAGTTGATCCCGAGTACCTGCATGGTCCCTGTTGCCACGCGC
CGAATGTAATACATGGCTTTAAACACATCAGCCTCCAATTAGATACAGACCACTTGACATTGCTCACCACCGAGGA
GAATGGGGCAACCCGGAACCACTGAATGGATCGTCGGAAGACCGTCAAGAACTTCAACGTCGACCGAG
ATGGCTTGAATACATATGGGGAATCATGAGCCAGTGAGGGTCTATGCCCAAGAGTCAGCAACGAGGACCCCTC
ACGGATGGCCACAGAAATAGTACAGCACTTACCATTGCCATCCTGTGTACACCATCTTAGCCGTGCGATCAG
CTACCGTGGCGATGATGATTGGCGTAACTGTTGCGAGTGTATGTGCTGTAAAGCGCGCGGTGAGTGCCTGACGC
CATAGCCCTTGGCCCAACCGCCGTAACTCCCACTTCCGTGGCACTCTTTGCTGCTTAGGTAGGTCGGCCAACTGCTG
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TGGCGCTTTTACATGCTTCTAATGCGCTGCTGCTCCTGCTGCTGCTGCTTTTTTAGTGGTTGCCGGCGCTACCTGG
CGAAGGTAGACGCCCTACGAACATGCGACCACTGTTCCAAATGTGCCACAGATACCGTATAAGGCACTTGTGTAA
GGCGAGGTATGCCCGCTCAATTTGGAGTCACTGTCTGCTGAGGTTTTCCTGGGTCCAGTTGTGATCACTT
ACATTACCTGCAAAATTCACCACTGTGGTCCCTCCCCAAAAATCAAATGTCTGCGGCTCCTTGGAAATGTCAGCCG
CCGTTTATGACAGCTATACCTGCAAGGTCTTCCGAGGGGTCTACCCCTTTATGTGGGAGGAGCGCAATGTTTT
GCGACAGTGAGAACAGCCAGATGAGTGAGCGGTACGTGCAACTGTGACGAGATTGCGCGTGTGACCAACGCGCAG
CGATTAAAGGTGCACACTGCCGCGATGAAAGTAGGACTGCGTATAGTGTACGGGAACACTACCAGTTTCTTAGATG
TGTACGTGAACGGAGTCACACCAGGAACGTCTAAAGACTTGAAGTCACTAGCTGGACCAATTCAGCATCGTTTA
CGCCATTGATCATAAGGTGCTTATCCATCGCGGCTGGTGTACAACTAGACTTCCCGGAATATGGAGCGGATGA
AACCAGGAGCGTTTGGAGACATTCAAGCTACCTCCTTGACTAGCAAGGATCTCATGCGCAGCACAGACATTAGGC
TACTCAAGCCTTCCGCCAAGAACGTGATGTCCTGACACGCGAGCCGATCAGGATTTGAGATGTGGAATAACA
ACTCAGGCGCGCCACTGCAGGAAACCGCACTTTCCGGGTGAAGATTGCAAGTAACTCCGCTCCGAGCGGTGACT
GTTTATACGGGAACATTCCTATTTCTATTGACATCCCGAACGCTGCTTTATCAGGACATCAGATGCACCACTGG
TCTCAACAGTCAAATGTGAAGTCAGTGAGTGCACTTATTGACGAGCTTCGGCGGGATGGCCACCTGCACTATG
TATCCGACCGCGAAGGTCAATGCCCCGTACATTGCACTTCGAGCAGCAAGCACTCCCAAGAGTCGACAGTACATG
TCCTGGAGAAAGGAGCGGTGACAGTACACTTAGCACCAGGAGTCCACAGCGCAACTTTATCGTATCGTGTGTG
GGAAGAAGACAACATGCAATGCAGAAATGTAAACCAACAGCTGACCATCTGAGCAGCCCGCAAAAAATGACC
AAGAATTTCAAGCCGCACTCTCAAAAACATCATGGAGTTGGCTGTTTGCCTTTTGGCGGCGCTGCTGCTAT
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gtgcataatgccacgcagcgtctgcataactttattatttcttttatttaatacaaaaaatttggtttttaacat
ttc

FIG. 2B-3



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ATTGACGGCGTAGTACACACTATTGAATCAAACAGCCGACCAATTGCACTACCATCACAATGGAGAAGCCAGTAG
TAAACGTAGACGTAGACCCCCAGAGTCGGTTTGTGCTGCAACTGCAAAAAGCTTCCCGCAATTTAGGATAGTAG
CACAGCAGTCTACTCCAAATGACCATGCTAATGCCAGGACATTTTCGACTTCGGCCAGTAAACTAATCGAGCTGG
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ATTGTGTCTGCCCCACTGCTAGTCCAGAGA CCGGACCGCATGATGAATATGCGCAGTAACTGGCGGAAAAAG
CGTGCAAGATTACAAACCAAGAACTTGCATGAGAAGATTAAAGGATCTCGGACCGTACTGTATACGCCGGATGCTG
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TGAGTTGCGAAGGCTACGTAGTGAAGAAAATCACCATCAGTCCCGGATCACGGGAGAAAACCGTGGGATACGGCG
TTACACACAATAGCGAGGCTTCTTGCTATGCAAGTTTACTGACACAGTAAAGGAGAACCGGATCTGTTCCCTG
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CACAAAACTTCTGGTTGGGCTCAACACAGCGAATTGTCTAATACGGTAGGACTAACAGGAACACCAACACCATGC
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AGAAAACTGCTGGGTATAGAGAACGCAAGCTTACGTACGGCTGCTGTGGGCGTTTCGCACTAAGAGGATACATT
CGTTTTATCGCCACCTGGAACGCGAGACCATCGTAAAAGTCCCAGCCTCTTTTAGCGCTTTTCCCATGTGCTCGG
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TGGAGGGGCTCCAGGCGGACATCGGAGCAGCTTAGTTGAAACCCCGCGCTGCAAGGATTAAGTACTCTCAAG
CAAAATGCGCTATGATCGGGACAGTATGCTGTGCTGCCAACTCTGCTGCTGAAGATGCCAACTCGCACCAG
CGCACCCGCTAGCAGATCAGGTTAAGATCATACCACTCCGGAAGATCAGGAAGTACGCGGTGCAACCATACG
ACGCTAAAGTACTGATGCGCAGCAGAGGTGCGTACCATTGCGCAGAACTTCAGTACTGAGTGAAGCGCCACGT
TAGTGTACACGAAAGAGAGTTTGTGAACCCGAACTATACCACATTGCCATGCTATGCGCCCGCAGAAATACAG
AAGAGGAGCAGTACAAGGTTACAAGGACAGAGCTTGCAAGAACAGAGTACGTGTTTTCAGCTGGGACAGAGCGGT
GCGTTAAGAAAGGAAGCCCTCAGGTCGTCTCTCGGGAGAACTGACCAACTCCCTCATCATGAGCTAGCTC
TGGAGGGACTGAAGACCCGCTCGGTCCTGTAAGGTCGAAACAATAGGAGTGATAGGCACACCGGGGTCGG
GCAAGTCAGCTATTATCAAGTCACTGTACCGGCACGAGATCTGTTTACAGCGGAGAAAGAAAGAAATTTGTCGGC
AAATTGAGGCCGACGCTGTAAAGTATGAGGGGTATGCAGATTACGTCGAAGACAGTAGATTCCGTTATGCTCAACG
GATGCCACAAAGCCGTAGAAGTGCTGTACGTTGACGAAGCGTTGCGGTGCCACGACGAGGACACTACTTGCTTGA
TTGCTATGCTCAGGCCCCGCAAGAGGTTAGTATATGCGGAGACCCCATGCAATGCGGATTTCTTCAACATGATGC
AACTAAAGGTACATTTCAATCAACCTGAAAAAGACATATGCACCAAGACATTTCTACAAGTATATCTCCGGCGGT
GCACACAGCCAGTTACAGCTATTGTATCGACACTGCATTACGATGGAAGATGAAAACCAAGAACCCGTCGAAGA
AGAACTTGAATCGATATTACAGGGGCCACAAAGCCGAGCCAGGGGATATCATCTGACATGTTTCCGCGGGT
GGGTTAAGCAATTGCAAAATCGACTATCCCGGACATGAAGTAAATGACAGCCGCGGCTCAAGGGCTAACCCAGAA
AAGGAGTGATGCGCTCCGGCAAAAAGTCAATGAAAACCCACTGTACGCGATCAGATCAGAGCATGTGAACGTGT
TGCTCACCCGACCTAGGACAGGCTAGTTGGAACCTTGCAGGGCGACCCATGGATTAAAGCACTCTACTAACA
TACCTAAAGGAACTTTCAGGCTACTATAGGAGCTGGGAAGCTGAACCAAGGAAATTAATGCTGCAATTAACCA
GCCCACTCCCGCTGCAATCCGTTTCAAGTGTGCAAGACCAAGCTTGTGCTGGGCGAAAGCATGGAACCGGATAC
CCACGGCCGCTATGCTACTTACCGGTTGCCAGTGGAGCGAACTGTTCCACAGTTTGGCGATGCAACACCACT
CGGCCATTGCTGCTAGACGTAATTTGCTAATGTTTTTCGGCATGGACTTGACAAGCGGACTGTTTTCTAAAC
AGAGCATCCCACTAACGTACCATCCGCGGATTCAGCGAGGCGGTAGCTCATTGGGACAAACAGCCGAGAACCC
GCAAGTATGGGTACGATCACGCCATTGCGCGCAACTCTCCGCTAGATTTCGGTGTTCAGCTGGGAGG
GCACACAACTTGATTGACAGCGGGGACCCAGAGTTTCTCTGCACAGCATAACTGGTCCCGGTGAACCGCA
ATCTTCTCAGCCCTTAGTCCCGAGTACAAGGAGAAGCAACCCGGCCGCTCGAAAAATTTCTTGAACCGTTCA
AACCACTCAGTACTGTGGTATCAGAGGAAAAAATTGAAGCTCCCGCTTAAGAAATCGAATGGATCGCCCGCA
TTGGCATAGCCGGTGAGATAGAACTACAACTGGCTTTTCCGGTTTCCGCGCAGGCACGGTACGACCTGGTGT
TCATCAACTTGGAACTAAATACAGAAACCACTTTTCAGCAGTGCGGAGACCATTCGCGGACCTTAAAAACCC
TTTCCGCTTCCGCTGAATTTGCTTAAACCAGGAGGCACCTCGTGGTGAAGTCTTATGCTACGCCGACCGCA
ACAGTGAGGACGTAGTACCGCTCTTGCCAGAAAGTTTGTGAGGTTGCTGCAGCGAGACGAGTTGTGCTCAA

FIG. 2C-1

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COMPOSITIONS AND METHODS FOR
GENERATING AN IMMUNE RESPONSE
UTILIZING ALPHA VIRUS-BASED VECTOR
SYSTEMS 09/551,977

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CGCAATACAGAAATGTACCTGATTTTCCGACAACTAGACAACAGCCGTACACGGCAATTCAACCCGACCCATCTGA
ATTGCGTGATTTTCGTCCGTGTATGAGGGTACAAGAGATGGAGTTGGAGCCGCGCGGTATACCCGACCAAAAGGG
AGAATATTGCTGACTGTCAAGAGGAAGCAGTTGTCAACGCAGCCAATCCGCTGGGTAGACCAGGCGAAGGAGTCT
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CATTCACCTACACAGGTGAACACCCGAGGATCTATAACTGGCACCCAGGAGCGGTGAGTATGAGGAGGTA
GATTTACCATCCCTCGCGAGTAGGAGGCAGAGGAGACAGCGGTGCTCGATCATGGATAACTCCGGTCGGTTG

FIG. 2B-2



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TCGCGATAGTCTCGGTGGAGCTGATGAAGGAACAGAACTGCCCTTTCCGGTCGTACCTGGAATAGTAAAGGGA
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tgttgccacataaaccactatattaccattttatctagcggagcgcacaaaaactcaatgtatttctgaggaagcgtg
gtgcataatgccagcgagcgtctgcataacttttattatttcttttatttaatacaaaaaattttgttttaacat
ttc

FIG. 2C-3



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Infection of human dendritic cells with a DC adapted alphavirus vector (DC+) expressing GFP

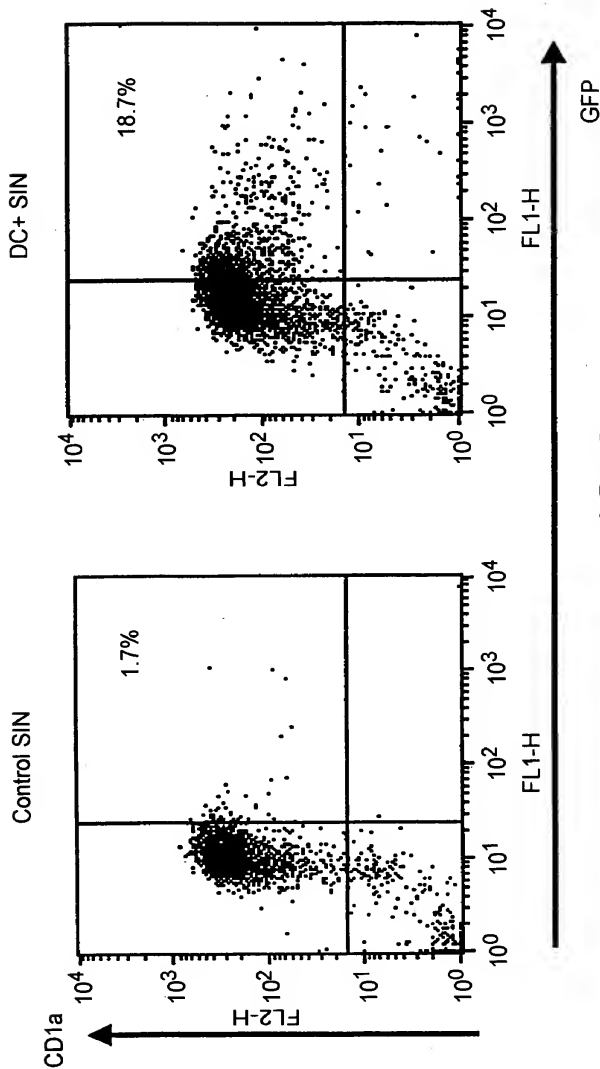


FIG. 3



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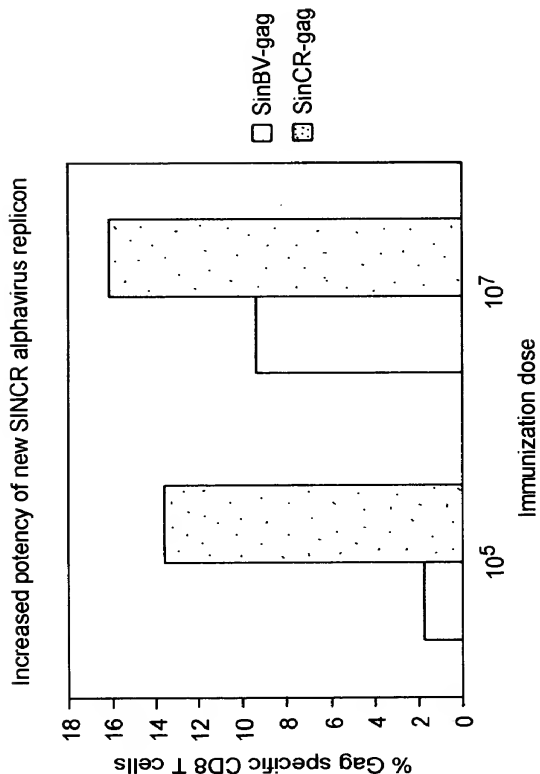


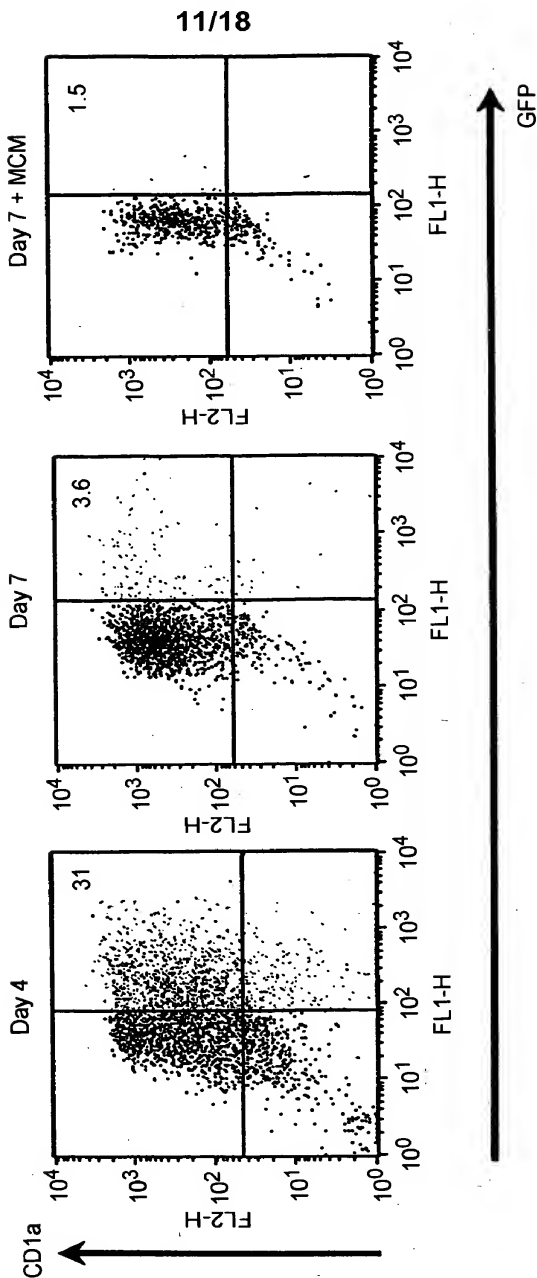
FIG. 4

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FIG. 5





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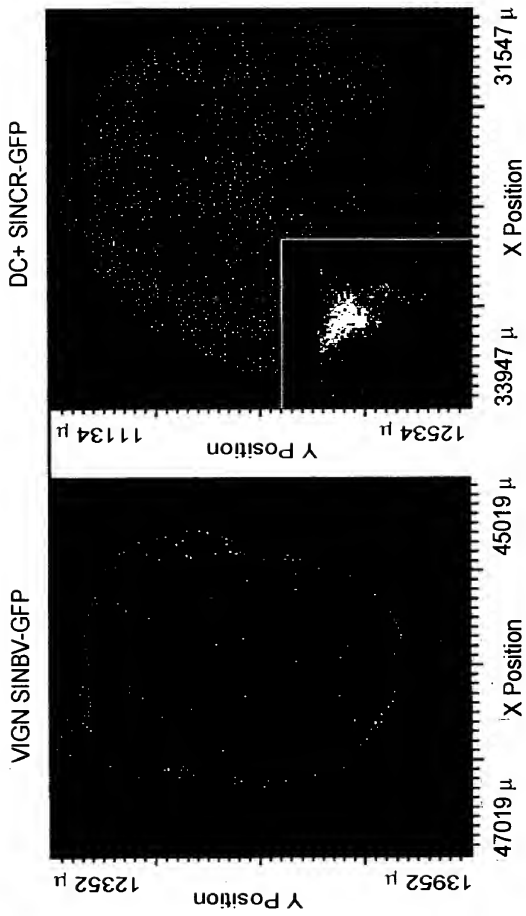


FIG. 6



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Trafficking of alphavirus vector transduced DC to the mandibular lymph node



x20

SIN-GFP vector injected intradermally, with rhodamine paint applied to skin

FIG. 7

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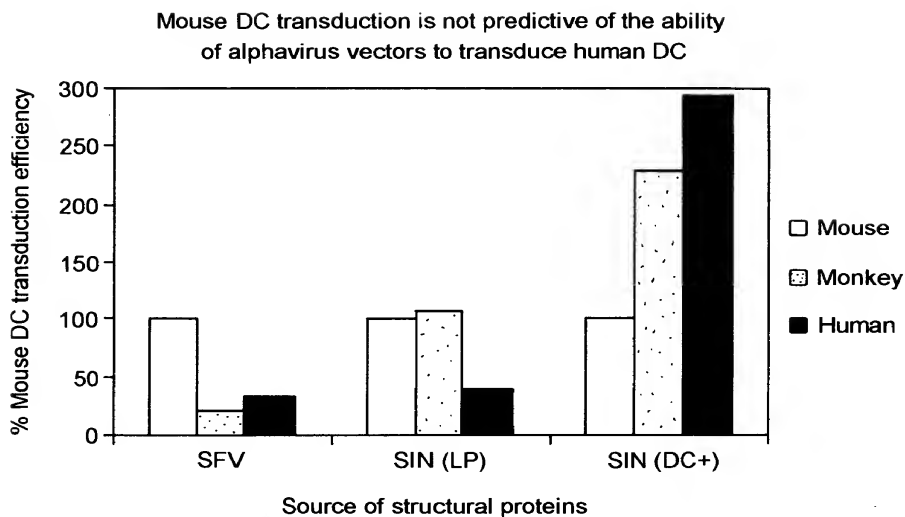


FIG. 8

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Polo et al.
COMPOSITIONS AND METHODS FOR
GENERATING AN IMMUNE RESPONSE
UTILIZING ALPHAVIRUS-BASED
VECTOR SYSTEMS
09/551,977

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Alphavirus vectors can induce DC maturation and activation both *in vitro* and *in vivo*

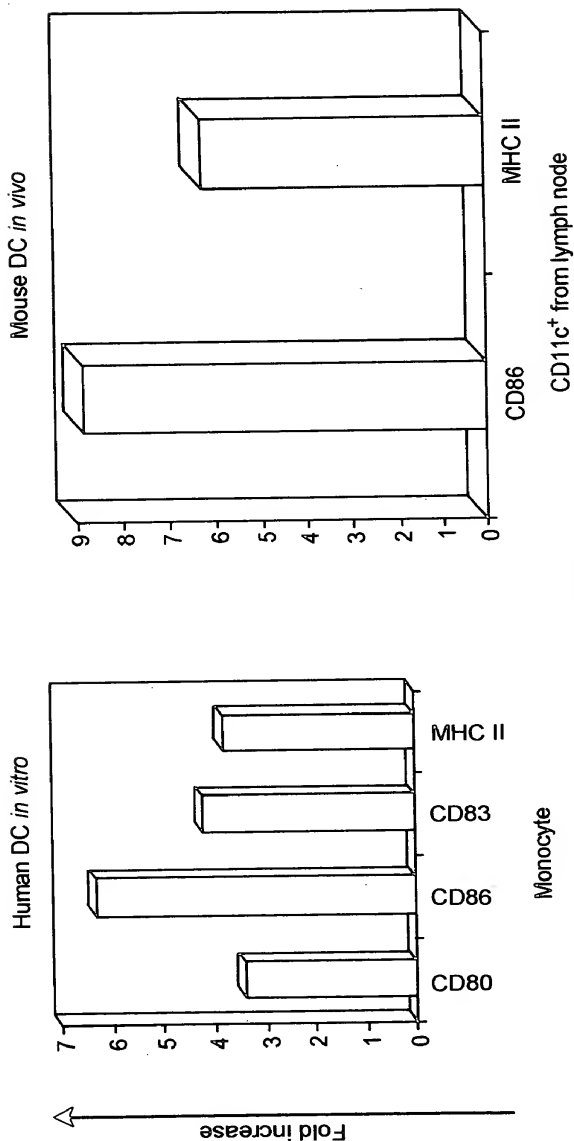


FIG. 9





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Adapted alphavirus vectors can be used to assay antigen presentation and immune stimulation in vitro

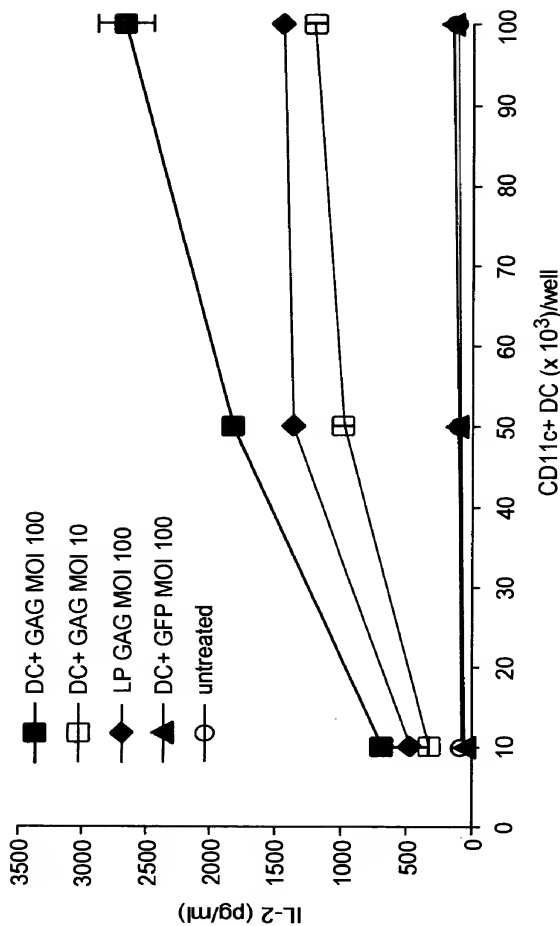


FIG. 10

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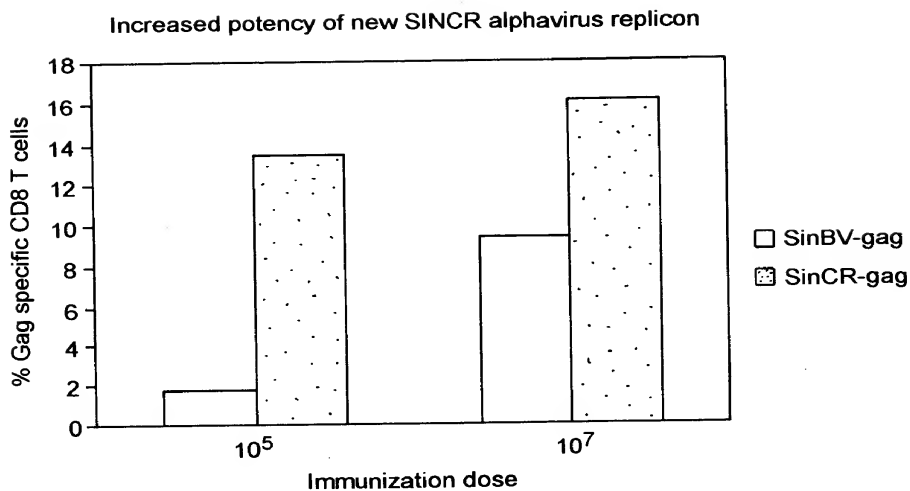


FIG. 11



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Enhanced immune response by using a prime-boost strategy

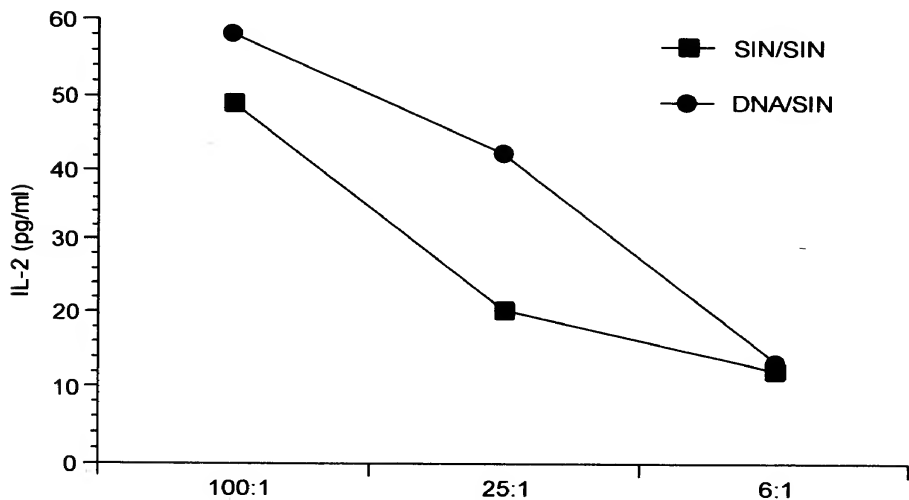


FIG. 12